

REMARKS

Claims 1-28 are pending and stand rejected. In reply to the rejections in this Action, applicants have amended Claims 1-4, 9, 10, 16, 22, 24 and 28. New claims 29-33 have been added, with claims 30-33 directed to the embodiment such as depicted in Figures 1A and 1B where there is yet no substantial deformation of fibers to cause fiber interlocking. (See page 9, last full paragraph). Reconsideration is respectfully requested in view of the following remarks.

Applicants respectfully submit that support for the amendments to claim 1 can be found in the original specification at, for instance, the first complete paragraph on page 10 and also in Example 1, that is, the paragraph bridging pages 21 and 22. Support for the amendment to claim 4 can be found in Table 1, for example. Applicants respectfully submit that the amendment of claim 28 more clearly shows that the claim further limits the claim from which it depends.

Claim Rejections - 35 U.S.C. §102

Claims 1, 2, 4-8, 12, and 16-28 were rejected under 35 U.S.C. §102(b) as being anticipated by, or in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 6,179,872 to Bell et al. (hereinafter referred to as "Bell"). Applicants respectfully traverse these rejections.

Before addressing the specifics of the rejections, applicants note that Bell discloses "fibrils", not --fibers-- as recited in the Action. Bell provides a specific definition for the term "fibrils" as used in his disclosure and goes on to distinguish between collagen fibrils and fibers. (Column 7, lines 44-53)

Applicants respectfully submit that Bell neither discloses nor suggests the claimed invention.

The Action states that Bell discloses centrifuged compositions in column 9, lines 17-67. The Action goes on to state that while Bell does not expressly state that his centrifuging produces interlocking or interlacing, from the disclosed applications of the mats and their physical tear properties disclosed in illustrative examples and throughout the specification, it is reasonable to believe that the fibers of the mats are inherently, at least partially, interlocked and thus, sufficiently processed to retard individual fiber dislocation.

Bell in lines 17-34 of column 9 discusses the process by which fibrils are formed from a solution. Lines 35 – 56 discuss collection of the fibrils formed by using a screen which may be vacuum assisted. It is not until we get to line 57 that we learn of a centrifuge and then it is being used to accelerate the collection of the fibrils that are forming. Once centrifuged down, "the supernatant is discarded and the pelleted fibrils are resuspended to form a slurry." No mention is made of the pelleted fibrils resisting resuspension. In marked contrast, the pelleted fibers of the claimed invention can be resuspended, but only with great difficulty. See, for

example, the second complete paragraph on page 11 of the pending application, which talks about the need for an extended period of time to accomplish the resuspension. Seemingly, if the pelleted fibrils of Bell were similarly interlaced and interlocked as the fibers of the instant invention are, they would be similarly difficult to re-suspend, and seemingly Bell would have mentioned this fact. Thus, it is likely the case that there was no interlocking or interlacing of Bell's fibrils causing them to resist disassociation. They were simply resuspended. This new slurry of resuspended fibrils was then again subjected to centrifugal force and applied to dishes and tubes (lines 64-67). There is no reason to believe that this second centrifugation caused any different result regarding the (apparent lack of) interlacing or interlocking.

In fact, it is Bell's goal to apply the fibril slurry to dishes or tubes, and he makes no distinction between transferring the slurry with or without centrifugation. In particular, Bell's last sentence in Column 9 says, "Therefore the fibril slurry can be transferred to solid bottom molds or onto double density foams or applied by centrifugal force or rotating motion to dishes and tubes."

The first part of this sentence discusses simple transfer of fibril slurry to a mold or double density foam. The second part of the sentence discusses applying the fibril slurry by a centrifugal force to dishes and tubes. Bell does not suggest any material difference caused by these two differing methods. Nor does he speak of a resultant supernatant caused by the second centrifugation. Obviously, Bell is not increasing the density of this final slurry, but merely using the centrifugal force to remove air bubbles and level the slurry in the dishes and tubes.

There is further evidence that Bell's fibrils are behaving differently than the claimed fibers. Concerning the physical tear properties, Bell states in Example 3 (Column 20, Lines 49-60) that the sheet, which utilized centrifugation, has reduced strength when compared to the control. **Thus, Bell has effectively taught that use of centrifugation reduces strength.** If Bell's fibrils were interlacing or interlocking, logically they would have higher tear strength than if they were not. The fact that they do not have more strength but less, strongly suggests that they are not interlacing or interlocking. In contrast, the centrifugation of the claimed invention, whereby fibers move through the suspending fluid and collect at an opposite end of the vessel, promotes high tear strength (see, for instance, Example 3 on page 22. Clearly, the method and resulting product of Bell is distinctly different from those of the claimed invention. New claim 30 and its dependents are patentable over Bell for this same reason.

Accordingly, applicants respectfully request that this rejection be withdrawn.

Claims 1, 2, 4, 16, 17, 22, 24-25 and 28 were rejected under 35 U.S.C. §102(b) as being anticipated by, or in the alternative, under 35 U.S.C. §103 (a) as obvious over U.S. Patent No. 3,742,955 to Battista et al. (hereinafter referred to as "Battista"). Applicants respectfully traverse these rejections.

Applicants respectfully submit that Battista neither discloses nor suggests the claimed invention. It is true that Battista centrifuges a slurry of collagen fibers to produce a "cake" of

amassed fibers. But he does not stop at this point. Instead, he continues to process the cake to separate the amassed fibers (his term is “deaggregate” or “fluff”) to produce a low density, high surface area product suitable for wound binding properties, e.g., a bandage. Thus, Battista has a different objective than do the instant inventors. Accordingly, his continued processing destroys the cake in order to convert it to a different product.

Even more than this, it would appear that Battista’s cake of amassed collagen fibers is not interlaced or interlocked as is the claimed invention. Again, if they were, he would have great difficulty in re-dispersing or re-slurrying his centrifuged fibers, and he seemingly would have mentioned this. So why do not his fibers interlace and interlock? After all, they are fibers, similar to the claimed invention, and not fibrils as in Bell. The answer could be in the type of centrifuging that he is doing. Note that Battista is using large quantities of slurry. The kind of centrifuge devices that handle such large quantities typically operate in a different way than do laboratory scale centrifuges that process slurries in small quantities, e.g., a test tube. The large scale centrifuges, such as the screen bowl centrifuge and the vibrating basket centrifuge shown in the Appendix to this paper, introduce the slurry into the chamber of a spinning drum. The drum contains a multitude of small holes, similar to a home clothes washing machine. The spinning action forces the liquid component of the slurry out through the holes. Thus, this type of centrifuging is different from the type that is claimed, that is, where the solids are forced down through the liquid, which is not drained away during centrifuging but rather remains in place.

The ramification of this distinction of centrifugation is that unlike the present invention, the large scale centrifuge devices are incapable of creating the interlaced and interlocked product that is possible with the laboratory scale centrifuge devices. This is because as the water is drained out through the holes in the basket, the fibers migrate *with* the fluid, until the first fibers come to rest on the surface of the basket. Subsequent fibers in the slurry that are migrating *with* the fluid fall on top of the other fibers, eventually amassing as a layered material, wherein the fibers are roughly in parallel planes. A layer-like or directional entanglement is different from the claimed interlacing phenomenon, as discussed, for example, in the long paragraph bridging pages 8 and 9 of the specification. Thus, if there is any movement of fibers relative to the fluid in these large scale centrifuges, it is as fluid within the mass of piled-up fibers is pulled out of the mass and out through the drain holes. Thus, the material produced by the present invention has vastly different characteristics than the material or “cake” produced by the large scale centrifuges, which in all probability is the type of centrifuge utilized by Battista.

Accordingly, applicants respectfully request that this rejection be withdrawn.

Claims 3 and 13-15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bell. The Action argues that the fiber slurry concentration of claim 3 is inherently present in Bell. The action further argues that, in view of Bell’s disclosure of adding various reinforcing materials to his matts, it would be obvious to add these reinforcing materials to the centrifuge vessel, as claimed in claim 13. In response, applicants respectfully submit that these claims are patentable over Bell because Bell neither discloses nor suggests the claimed invention

comprising sufficiently interlaced, or interlaced and interlocked fibers to retard their dissociation. Accordingly, applicants respectfully request that this rejection be withdrawn.

Claims 9-11 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bell in combination with U.S. Patent No. 4,066,083 to Ries (hereinafter referred to as “Ries”). Applicants respectfully traverse this rejection.

Applicants respectfully submit that neither Bell nor Ries, whether taken individually or in combination, discloses or suggests the claimed invention. As mentioned above, Bell neither discloses nor suggests the claimed fibers that are “sufficiently interlaced, or interlaced and interlocked as to retard their dissociation”. Ries fails to remedy this deficiency of Bell.

Accordingly, applicants respectfully request that this rejection be withdrawn.

Claims 5-8, 18-20 and 26-27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Battista in combination with Bell. Applicants respectfully traverse this rejection.

Applicants respectfully submit that neither Battista nor Bell, whether taken individually or in combination, discloses or suggests the claimed invention. As mentioned above, neither Battista nor Bell discloses or suggests the claimed “interlacing, or interlocking and interlacing” of the polymer fibers. Thus, each document also fails to remedy the deficiency of the other.

Accordingly, applicants respectfully request that this rejection be withdrawn.

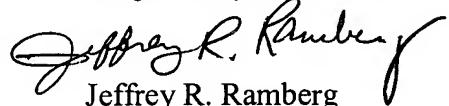
CONCLUSIONS

The claimed invention is neither anticipated nor rendered obvious by the cited references, applicants respectfully submit. Both Bell and Battista disclose centrifuging a slurry containing filamentous materials in one or more embodiments, but neither seems to produce a mass whose filaments are interlaced and interlocked. In particular, each seems to be able to re-suspend his centrifuged filamentous mass with no problem. The claimed invention utilizes fibers, whereas Bell uses fibrils, which he distinguishes from fibers. Battista uses fibers, but his centrifuges likely are of the “rotating screen” variety, which operate differently than the claimed centrifuging method that “causes the fibers to migrate down through the fluid”. The other cited references fail to remedy the deficiencies in these two primary references.

In view of the carefully amended claims and the above remarks, applicants respectfully submit that the present application is in condition for allowance. Accordingly, applicants respectfully request issuance of a Notice of Allowance directed to claims 1-33.

Should the Examiner deem that any further action on the part of applicant would be desirable, the Examiner is invited to telephone applicants' undersigned representative.

Respectfully submitted,



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October 28, 2004

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Enclosure: Appendix -- Examples of two commercial sized centrifuges